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A History of the Fossil Fruits and Seeds of the London Clay. By James Scott Bowerbank, F.G.S., &c. With numerous Engravings. Part I. London, Van Voorst, price 16*s*.

We have here a work, which if carried through as it has been begun, cannot fail to be of the highest interest and utility to the geologist and the botanist. An extract from the Prospectus will best explain what the author has undertaken, and the manner in which he proposes to execute it.

"Among the numerous and highly interesting fossils found in the London clay, none are more abundant than the remains of fruits and seeds, which, although occurring in such amazing quantities in the Isle of Sheppey, have hitherto received but little attention from geologists, and consequently present a wide field for inquiry and research.

"For many years past the author of the present work has made these interesting remains his peculiar study; and during this period there have passed through his hands more than 120,000 fruits and seeds, from which he has selected about 25,000 specimens. He proposes to publish figures and descriptions of as many of the species as can with certainty be determined; and, as a guarantee for the accuracy of the delineations, he considers it will be sufficient to announce that the whole of the drawings and engravings will be executed by Mr. James De Carle Sowerby.

"In these beautiful remains of an extinct Flora, the minute and delicately-formed vegetable tissues are preserved in the most perfect manner; and it is part of the Author's plan to give numerous highly magnified illustrations of the anatomical structure, as well as of the external form."

It is obvious that the value of such a work must greatly depend upon the execution of the figures. Lest we should therefore fail in conveying to our readers an adequate idea of the force and accuracy of the engravings, we have obtained the favour of the impressions of Plate IV. which accompany our present number, and which may serve to illustrate what we shall extract relative to Mr. Bowerbank's first group, *Nipadites*, and the interesting species which it represents, *Nipadites Parkinsonis*.

"The fruits of which this group is composed are found in considerable abundance on the beach at Sheppey, forming a portion of the organic remains impregnated with *pyrites*, so plentifully discovered there. They are known among the women and children, by whom they are usually collected, by the name of Figs. The epicarp and endocarp are thin and membranous; the sarcocarp is thick and pulpy, composed of cellular tissue, through which run numerous bundles of vessels. The cells are about the eight hundredth part of an inch in diameter. Nearly in the centre of the pericarp is situated

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a single large seed. (See Plate IV. fig. 2. *a*.) This, when broken, is usually found to be more or less hollow. It is frequently not more than half a line in thickness, but in the more perfect specimens it generally presents the appearance of a close, granulated structure, in which small apertures, containing carbonaceous matter, occasionally occur. These apertures possess much uniformity, both in size and shape, and are of about the same dimensions as the cells of the sarcocarp. This seed in one species, *Nipadites Parkinsonis*, when in the most perfect state of preservation, was found to consist of regular layers of cells, radiating from a spot situated near the middle of the seed, and apparently enclosing a central embryo."

"One very fine fruit of a species of *Pandanus* in the possession of my friend Mr. Ward, which is nearly four inches in length and two inches and a half mean diameter, approaches very nearly in external form to the fossil *Nipadites Parkinsonis* (Plate IV.), excepting that instead of being terminated somewhat acutely, like the fossil alluded to, it is depressed at the apex, and has eleven umbones, which are nearly equidistant from each other. Upon making a transverse section of this fruit at about its middle, eleven embryos were seen, arranged exactly in the manner indicated by the umbones at the apex of the fruit, and passing nearly in straight lines from that point towards its base. The cells containing the embryos were about the eighth of an inch in diameter."

"But of all the fruits that I have yet seen, there are none which approach so nearly to the fossil *Nipadites* as one of which my friend Mr. Ward has lately received two specimens from Captain Roberts, of the ship Indemnity, who met with them floating in the sea off the island of Java, at the mouth of a small river. These fruits my friend Mr. G. Loddiges recognized as the seed-vessels of *Nipa fruticans*."—"In their disposition and general character they very nearly resemble the corresponding parts in several species of our fossil *Nipadites*, especially *Nipad. umbonatus*."—"The epicarp is thin and smooth, and furnished near the apex of the fruit with numerous puncta, strongly resembling, both in form and extent, those occurring near the apex of the fruit figured in Plate IV. fig. 3."

The *Nipa fruticans* occurs, it is stated, "at the mouths of rivers in the Philippines and Molucca islands, especially in Ternate, and likewise in the Celebes. The tree grows in places within the influence of the tides. The fruits are often carried by the tide, and thrown on shore in distant places; and they take root where the soil is suitable. If the habits of the plant which produced our fossil fruits, as is justly observed by the Author, were similar to those of the recent palm just described (and it is highly probable that such was the case), it may account for their amazing abundance in the London clay.

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We may also remark, that several of the *Cupressinites* present a striking resemblance to the fruits of certain species of the Coniferous genus *Callitris*, principally confined to New Holland and Van Diemen's Land; and one, *Cupressinites curtus* (pl. x. fig. 20.), exhibits a close analogy with the fruits of *Callitris quadrivalvis* from Mount Atlas, being the only recent species in the Northern hemisphere.

The author is entitled to great praise in undertaking the illustration of one of the most difficult and important departments of fossil botany; and we trust that he may be encouraged to continue his researches in a subject so replete with interest, and in the prosecution of which he has already displayed so much zeal and ability.

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